

CLAIMS

What is claimed is:

- 1 1. An integrated circuit transformer comprising:
2 a substrate for supporting multiple layers of an integrated circuit;
3 a first metallization layer comprising a first set of turns of a primary
4 winding of a transformer, and a second set of turns of a first secondary
5 winding of said transformer;
6 a second metallization layer separated from said first metallization layer
7 by an insulating layer, said second metallization layer comprising a second
8 set of turns of said primary windings and
9 a via connection connecting one end of said primary first set of turns to
10 one end of said primary winding second turns, whereby a complete primary
11 winding is provided using said first and second metallization layers.
- 1 2. The integrated circuit transformer according to claim 1 comprising a
2 third metallization layer for connecting the ends of said windings to external
3 connections of said integrated circuit.
- 1 3. The integrated circuit transformer according to claim 1 further comprising a
2 third set of turns of said secondary winding coplanar with, and separated by said
3 second set of turns of said primary winding.
- 1 4. A method of manufacturing an integrated circuit transformer comprising:
2 forming a first metallization layer on a substrate comprising a first plurality
3 of turns of a first winding;
4 forming an insulating layer over said first metallization layer;

5 forming a second metallization layer on said insulating layer comprising a
6 second plurality of turns of a second winding, and a third plurality of turns of a
7 third windings; and
8 connecting one end of said second winding to one end of said first winding
9 whereby a primary winding is provided for said transformer and said third winding
10 comprises a secondary for said transformer.

1 5. The method according to claim 4 further comprising forming a via in said
2 insulating layer and connecting said one end of said second winding to said one
3 end of said first winding through said via.

1 6. The method according to claim 4 wherein said second plurality of turns of
2 said second winding are separated by said third plurality of turns of said third
3 winding.

1 7. The method according to claim 4 further comprising:
2 forming a fourth set of a plurality of turns of a fourth winding on said first
3 metallization layer to form a second secondary winding for said transformer.

1 8. The method according to claim 7 wherein each turn of said fourth winding
2 is separated from each other by said first plurality of turns of said transformer
3 winding.

1 9. The method according to claim 4 further comprising:
2 forming an insulating layer over a region of a substrate having semiconductor
3 devices; and
4 forming said first metallization layer on said insulating layer.

- 1 10. The method according to claim 9 wherein said insulating layer comprises
- 2 SiO₂.